

A FLIGHTLESS AUK, *MANCALLA CALIFORNIENSIS*. FROM
THE MIOCENE OF CALIFORNIA.

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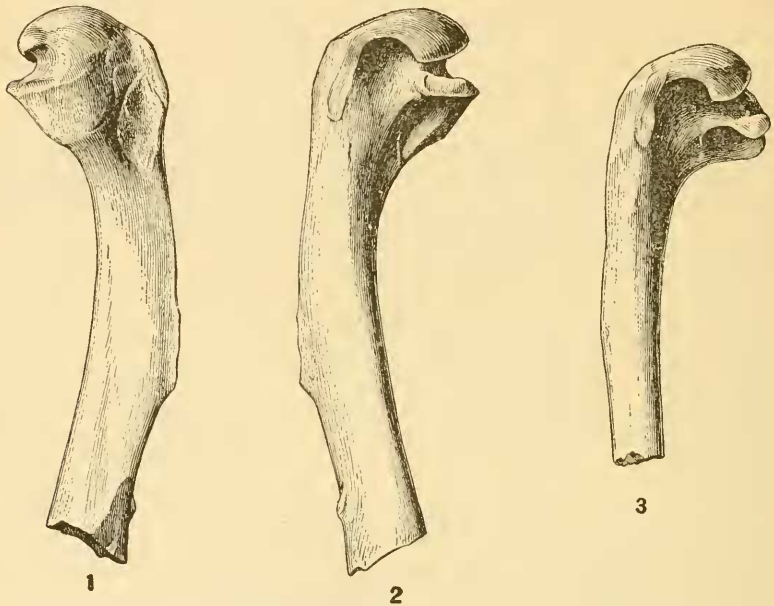
The name *Mancalla californiensis* is proposed for a fossil flightless auk, represented by a nearly complete left humerus found in excavating Third street tunnel at Los Angeles, California, in strata considered by Mr. W. H. Dall as belonging to the Upper Miocene or Lower Pliocene, probably the former. The type is No. 4976 in the catalogue of fossil vertebrates, U. S. National Museum. The genus is characterized by a short flattened humerus, devoid of the customary sigmoid flexure, by the moving of the articular head of the humerus toward the ulnar border, and by the development of the ridge for the attachment of the brachialis inferior muscle. Total length of specimen 68 mm.

That the bird was flightless is shown at once by the shortness and flatness of the humerus, and further by the fact that the bone lacks the slightly sigmoid shape characteristic of the humeri of flying birds, being instead slightly concave on the ulnar border. Absence of the power of flight is also shown by the moving of the articular head of the humerus toward the ulnar side, as in birds which fly well the articular face is well toward the radial border. In the penguins this face is as far down on the ulnar border as the lowest point of the inferior crest, and in the flightless Great Auk the articular surface is nearer the ulnar border than in any other member of the auk family save the one under consideration. The inferior crest is stout and well developed, and incloses a large subtrochanteric fossa. This is pierced for an artery, and so is the corresponding fossa of the Great Auk, while no such perforation is present in the specimens of *Lonvica*, *Alca*, or *Lunda* examined.

The humerus has a larger medullary cavity than has the corresponding bone of the Great Auk, and it is interesting to recall that the leg bones of *Hesperonis*, the most highly specialized of aquatic birds,

were also hollow, and probably filled with marrow. In the penguins the leg bones are filled with cancellar tissue.

The bird to which this humerus belonged was more highly specialized, more completely adapted for subaquatic flight, than the Great Auk, although the wings were not so extremely modified as those of the penguins. This is probably due to the fact that the penguins swim solely with their wings, while the auks use both wings and feet. The occurrence of a flightless auk at so low a geological horizon as the Miocene is of great interest, as indicating a much earlier origin for the family. From the greater degree of specialization of the wings, it is



FIGS. 1 AND 2.—SUPERIOR AND INFERIOR VIEWS OF TYPE SPECIMEN OF *Mancalla californiensis*.
FIG. 3.—CORRESPONDING PORTION OF LEFT HUMERUS OF *Lomvia troile californica*, ALL SLIGHTLY ENLARGED.

fair to infer that the body of *Mancalla* was larger in proportion to the size of the humerus than that of the Great Auk, and that hence the actual bulk of the two was not greatly dissimilar. *Mancalla* was certainly larger than any of the murre, although its nearest living relative appears to be the Pacific Murre, *Lomvia troile californica*.

In small birds absence of the power of flight implies freedom from enemies, and as this practically means isolation, it is probable that this flightless auk bred on some islands near the coast. The mollusk fauna associated with the specimen is Miocene in its aspect, and also indicates a cooler climate than that now prevailing in the latitude of Los Angeles, approximately that of Puget Sound.